Tim McCabe, USDA/NRCS

U.S. Farm Structure

Declining—But Persistent—Small Commercial Farms

Robert A. Hoppe, rhoppe@ers.usda.gov

- The continuing shift in production away from small commercial farms to larger farms is driven by financial pressures and aging operators.
- Some small commercial farms are profitable, while others stay in business by accepting low returns for their labor.
- Small commercial farms produced 22 percent of the Nation's farm output in 2007.

U.S. farm production is shifting to larger operations, while the number of small commercial farms and their share of farm sales continue a slow, long-term decline. Larger farms have a competitive advantage over smaller farms in most commodities because the average cost of production per unit declines as the size of the operation grows (referred to as economies of size). In addition, many of the operators of small commercial farms are at least 65 years old and are leaving farming as they grow older.

Nevertheless, some small commercial farms are profitable, and the operators of many of the others are willing to place a low value on their labor, accept losses, and rely on off-farm income. Thus, the shift of production to larger farms will continue to be gradual, and substantial numbers of small commercial farms will remain in business.

Defining Farm Categories

To trace shifts in the size distribution of farms and farm production over time, ERS researchers compared data from the 2007 Agricultural Resource Management Survey (ARMS) and the 1991 Farm Costs and Returns Survey (FCRS). The FCRS is an earlier annual farm survey, the predecessor to ARMS, and 1991 is the earliest year that the FCRS and ARMS are fully compatible. ARMS is an annual sample survey conducted jointly by USDA's National Agricultural Statistics Service (NASS) and ERS. The ARMS sample includes 20,000 to 24,000 farms each year, covers all types of farms, and is designed to accurately represent farms and production in the continental United States.

To measure farm size, ERS researchers used gross cash farm income, which is the sum of farm revenue from commodity sales (including sales through marketing contracts), Government payments, and other farm-related income, including fees from production contracts. Farms were divided into four homogeneous groups based on annual gross cash farm income:

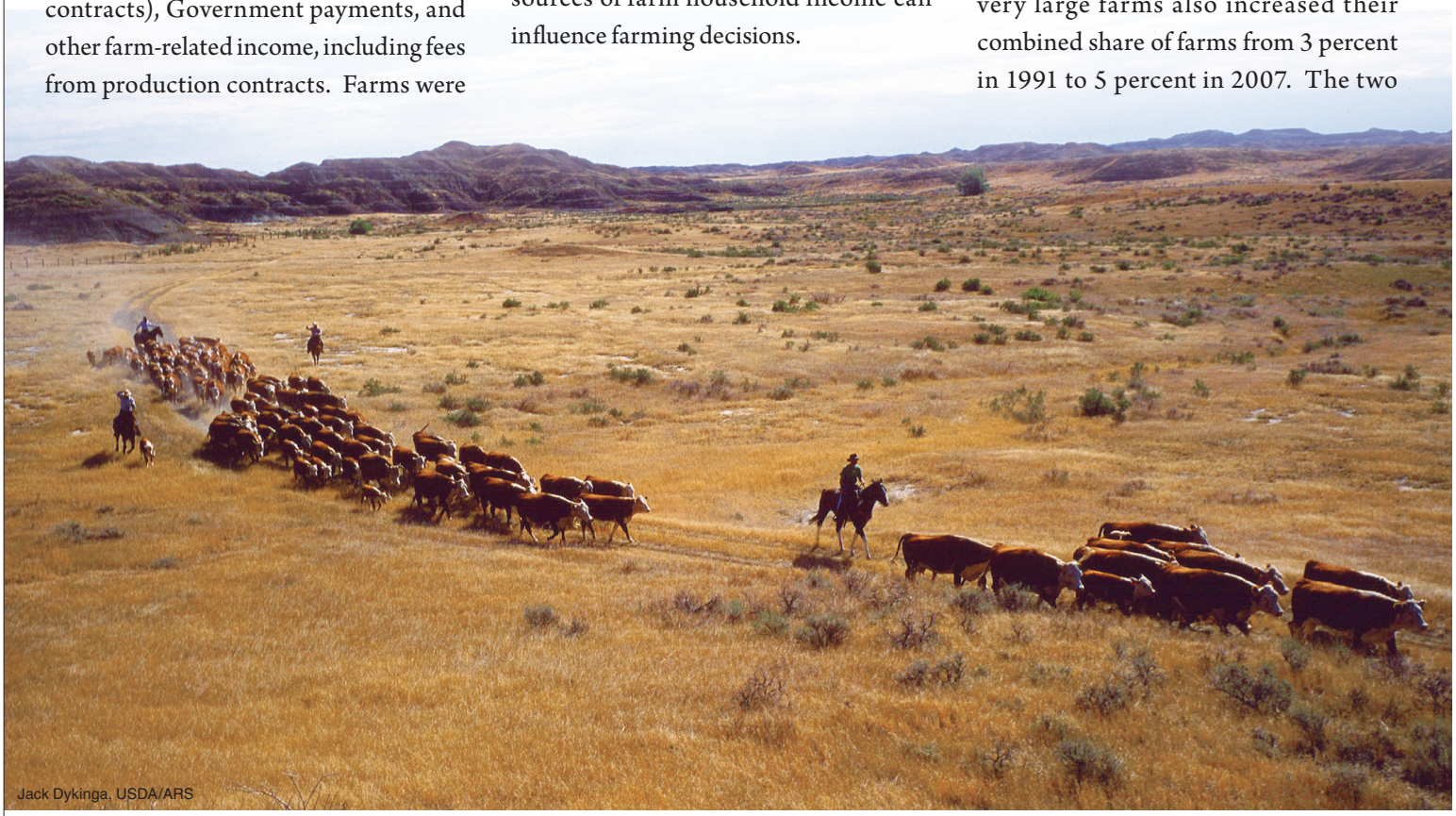
- **Noncommercial farms.** Gross cash farm income less than $10,000.
- **Small commercial farms.** Gross cash farm income of $10,000 to $249,999. Farms with gross cash farm income in this range meet a threshold level of farm income that indicates a commitment to farming. The $250,000 cutoff to identify small farms was recommended by the Small Farm Commission.
- **Large farms.** Gross cash farm income of $250,000 to $999,999.
- **Very large farms.** Gross cash farm income of $1 million or more.

Examining variation in the financial returns of farms of different sizes helps clarify the pressures on operators to leave farming. In addition, farm operators' characteristics—particularly their age—and sources of farm household income can influence farming decisions.

Size Distribution of Production Shifts Upward

Although the number of farms was similar in 1991 and 2007—just over 2 million—the size distribution has changed. Noncommercial farms—those with gross cash farm income below $10,000—increased from two-fifths to more than half of all farms, partly due to USDA's efforts to count all of the smallest farms in surveys and the Census of Agriculture. Despite the noncommercial group's increasing share of farms, its share of the value of production remained about 1 percent in both 1991 and 2007. Operators of noncommercial farms generally are not heavily engaged in farming, typically reporting a nonfarm occupation or saying they are retired.

Farms at the upper end of the large category—those with gross cash farm income of $500,000 to $999,999—and very large farms also increased their combined share of farms from 3 percent in 1991 to 5 percent in 2007. The two



Jack Dykinga, USDA/ARS

Very large farms had largest increase in share of production from 1991 to 2007

Gross cash farm income class	Farms		Value of production		Negative operating profit[1]		Principal operator age 65 or older	
	1991	2007	1991	2007	1991	2007	1991	2007
	Number		*Billion 2007 dollars*		*Percent of farms*			
U.S. total	2,099,900	2,196,791	195.5	292.0	58.8	64.3	25.4	27.6
	Percent of U.S. total				*Percent of farms*			
Noncommercial farms (less than $10,000)	41.7	54.2	1.4	1.2	66.6	74.9	30.2	26.5
Small commercial farms	51.2	36.5	40.7	22.2	56.9	59.3	23.6	32.1
$10,000 to $49,999	27.4	20.7	7.7	3.4	62.7	69.3	30.2	36.7
$50,000 to $99,999	11.0	7.6	10.2	5.1	55.5	52.9	21.6	31.7
$100,000 to $249,999	12.8	8.1	22.8	13.7	45.5	39.7	11.2	20.7
Large farms	6.2	7.5	29.9	30.1	27.8	23.4	9.8	16.6
$250,000 to $499,999	4.5	4.5	16.8	14.4	30.0	25.8	8.1	18.0
$500,000 to $999,999	1.7	2.9	13.1	15.7	22.3	19.5	14.1	14.6
Very large farms ($1,000,000 or more)	0.9	1.9	27.9	46.5	23.3	14.6	13.1	14.7

Note. Gross cash farm income classes and total value of production are expressed in 2007 constant dollars, using the Producer Price Index for Farm Products to adjust for price changes.

[1]Operating profit = net farm income + interest paid - charges for operator and unpaid labor - a charge for management.

Source. USDA, Economic Research Service and National Agricultural Statistics Service, 1991 Farm Costs and Returns Survey and 2007 Agricultural Resource Management Survey, Phase III.

farm size classes doubled in number but still accounted for only 105,000 of the 2 million total farms in 2007. Both of these size classes also increased their share of production, with very large farms' share of total U.S. production growing from just over a fourth to nearly half.

Small commercial farms accounted for a third of farms in 2007, down from half of all farms in 1991. Small commercial farms' share of production declined from about 40 percent to just over 20 percent, mirroring the rising share of production on very large farms.

What's Behind the Shift to Larger Farms?

The shift in production to very large farms partly reflects technological advancements in farming. Production of fed cattle, hogs, poultry, and milk, for example, moved into climate-controlled buildings, which reduced the impact of weather. Improvements in disease control, handling, transport, and nutrition increased the number of production cycles per year. These advancements helped standardize production, making it easier for livestock producers to operate on a large scale. Technological factors, such as the development of larger and faster equipment, information and Global Positioning System technologies, and more routine pest control through genetically modified seeds, expanded the crop acreage that producers could effectively control.

Low profitability of small commercial farms contributed to their declining shares of farms and production. Nearly 60 percent of small commercial farms had negative operating profits in both 1991 and 2007 (see box, "Calculating Operating Profits"). Substantially smaller shares of

large (23 percent in 2007) and very large farms (about 15 percent) had negative operating profits—and those shares declined between 1991 and 2007—reflecting economies of size in farming and the ability to take advantage of technological advances. The greater profitability of large and very large farms gave them a competitive advantage over small commercial farms.

Two-thirds of noncommercial farms also had negative operating profits in 1991, with the share rising to three-fourths by 2007. But low profitability is less of an issue for these farms because operating a profitable farm is less likely to be a major goal for the operators. They also may engage in farming to secure long-term capital gains, shelter off-farm income from taxation, live a rural lifestyle, or pass the farm—which can be valuable, depending on the location and acres involved—on to their heirs. These farms are likely to continue, as long as the operator households have enough off-farm income to meet living expenses and farm losses are not unduly large.

The high average age of operators also played a role in the decline of small commercial farms. Operators on small commercial farms with sales less than $100,000 in 1991 were more likely to be at least 65 years old than the operators of larger farms. As these older operators continued to age after 1991, some left farming and were not replaced by younger operators, since their farms were generally not profitable. As a result, the share of small commercial farms with gross cash farm income under $100,000 operated by someone over age 65 rose from 28 percent in 1991 to 35 percent in 2007.

A similar pattern in age of operator occurred on the larger small commer-

Calculating Operating Profits

This article measures farm profitability using operating profits rather than net farm income, a closely related concept frequently used at ERS and elsewhere. Calculating net farm income is the first step in determining operating profits. Net farm income is calculated as:

> Net farm income = Gross cash receipts + home consumption + imputed value of farm dwelling + net inventory change – cash expenses – noncash benefits for paid labor – depreciation.

Net farm income, however, excludes an important implicit cost—the unpaid labor provided to the farm business by principal operators, secondary operators, spouses, and other household members on unincorporated farms. Operating profits account for these expenses and are calculated as:

> Operating profits = net farm income + interest paid – charges for operator and unpaid labor – a charge for management.

Operating profits measure the funds available to finance the farm business's capital after accounting for the labor and management contributed by operators and their families. The charge for unpaid labor accounts for most of the difference between net farm income and operating profits.

Bruce Fritz, USDA/ARS

cial farms (gross cash farm income from $100,000 to $250,000) and the smaller large farms (gross cash farm income from $250,000 to $499,999). The share of operators at least 65 years old was more stable between 1991 and 2007 once gross cash farm income exceeded $500,000. In contrast, the average age of noncommercial farm operators dropped, indicating entry of new, younger operators.

Off-Farm Income Is Critical to Households Operating Small Commercial Farms

Despite the large share of small commercial farms with negative operating profits, households running these farms do not generally experience low income because they have off-farm income. On well over half of small commercial farms, the operator and/or spouse work off the farm. For older operators, income from Social Security, pensions, and investments are also important. Median farm income does not become positive until gross cash farm income exceeds $50,000. Even for farms in the upper size range of small commercial farms, off-farm income contributes about as much as farm earnings to total household income.

The median income of households operating small commercial farms compared favorably with the $47,300 median of all U.S. households in 2007. Households operating farms at the upper end of the small commercial scale have a higher median income ($68,600). Their income is closer to the median for U.S. households with a self-employed head ($75,700) than to that for all U.S. households.

Small commercial farms produce commodities that reflect their reliance on off-farm income. Poultry, cash grains/soybeans, and beef—commodities that can be produced on a part-time basis—make up three-fourths of the production of small commercial farms. In contrast, dairy and high-value crops, such as vegetables, fruits and tree nuts, and nursery and greenhouse products, require a larger commitment of full-time labor. These farm products account for 12 percent of production of small commercial farms but 44 percent of very large farms.

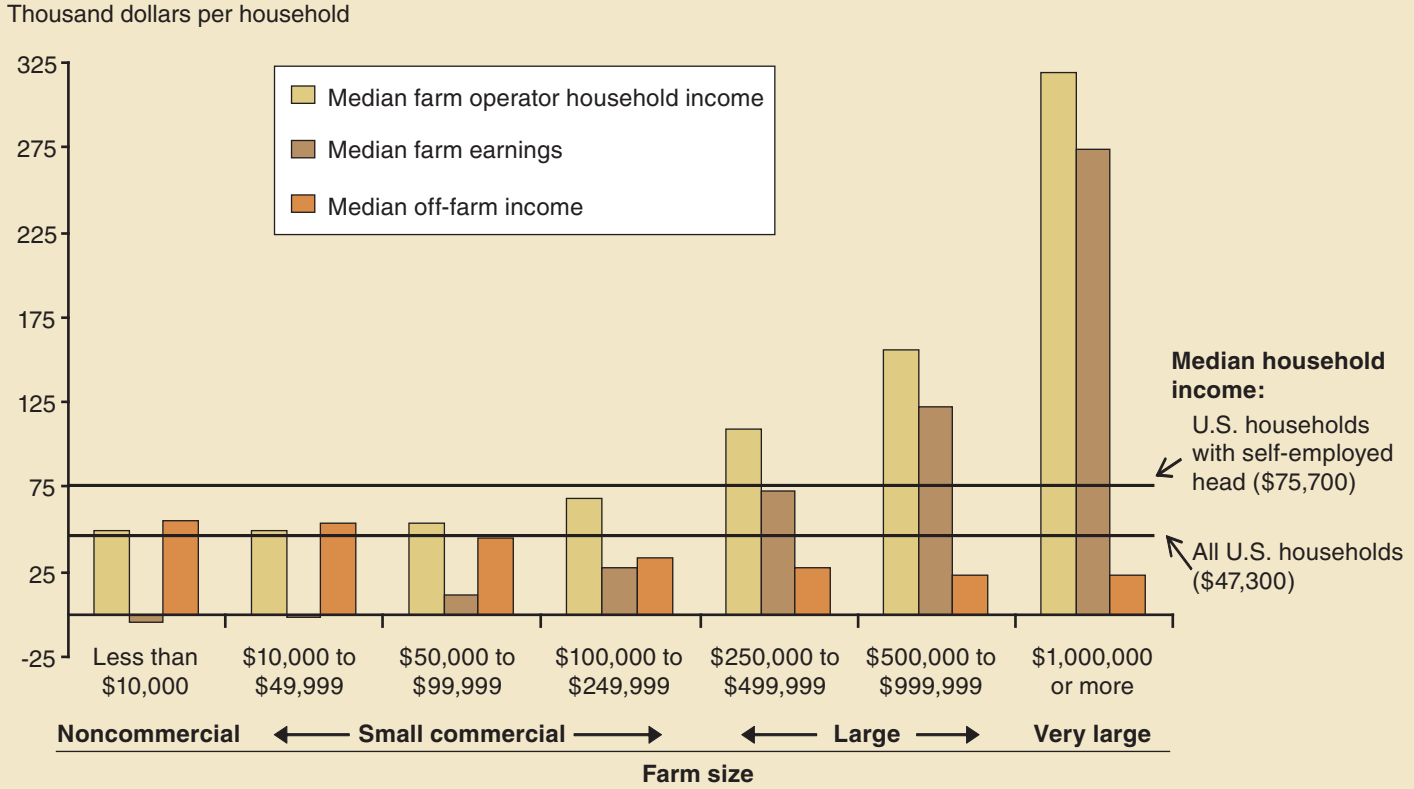
Wealth of Farm Households Exceeds That of All U.S. Households

Although the income of households operating small commercial farms is comparable with that of all U.S. households, their median wealth (or net worth) is roughly six times higher, approximately $750,000 versus $120,000 for all U.S. households. Much of the wealth of small commercial farm households comes from the ownership of land, and small-farm operators can easily own land worth several hundred thousand dollars. The median wealth of farm households increases with farm size, ranging from about $400,000 on noncommercial farms to $2.5 million on very large farms (see chart on page 55). About 94 percent of farm households have net worth greater than or equal to the median for all U.S. households.

The farm accounts for most of the wealth of farm households, regardless of farm size. Overall, about three-fourths of operator household net worth is based on the farm business (again, see chart on page 55). Most of this net worth is illiquid

Joe Valbuena, USDA

Income from farming turns positive when gross cash farm income exceeds $50,000



Source: USDA, Economic Research Service and National Agricultural Statistics Service, 2007 Agricultural Resource Management Survey, Phase III, for farm households; Federal Reserve Board, 2007 Survey of Consumer Finances for all U.S. households and U.S. households with a self-employed head.

and not directly available for household spending since it is largely based on assets necessary for farming, especially farmland. Nonetheless, these assets can be used as collateral for loans that can support the farm household during temporary downturns.

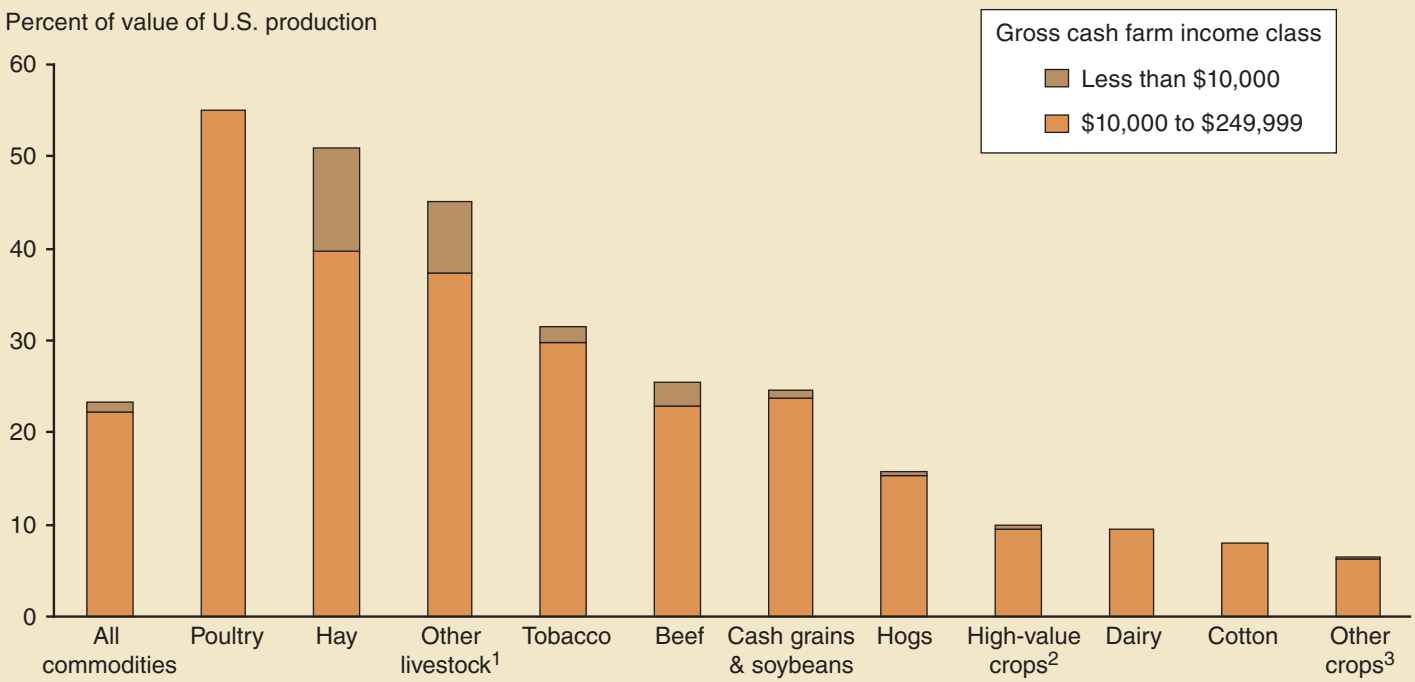
Small Commercial Farms Account for Nearly a Quarter of Farm Production

Despite the declining numbers of small commercial farms, their production is substantial and is expected to remain so for the foreseeable future. In 2007, small commercial farms accounted for 22 percent of all U.S. farm production, or approximately $65 billion. This was 16 percent more than total agricultural production in the Corn Belt (Illinois, Indiana, Iowa, Missouri, and Ohio) and nearly twice as much as production in California, the State ranking first in farm output.

Small commercial farms accounted for a considerable share of production for some commodities: 55 percent of poultry, 40 percent of hay, 37 percent of other livestock (largely grazing animals other than cattle), and 30 percent of tobacco, a crop with a long history of production on small farms. In addition, small farms' share of beef production—largely from cow/calf or stocker enterprises—and grain and soybean production was similar to their 22-percent share of all production.

Most poultry farms are small businesses, with gross cash farm income less than $250,000. Although 55 percent of poultry production occurs on these small farms, contractors actually own the poultry and the farms receive a fee for their services rather than revenue from sales of the birds. For example, contract broiler producers—who are provided with feed and chicks by contractors—receive con-

Small commercial farms produce substantial shares of some commodities



[1]Sheep, lambs, wool, goats, and their products; horses and other equine; bees and honey; aquaculture; mink, rabbits, and other fur-bearing animals; etc.

[2]Vegetables, fruit and tree nuts, and nursery and greenhouse products.

[3]Peanuts, sugar beets, sugarcane, corn for silage, sorghum for silage, canola, etc.

Source: USDA, Economic Research Service and National Agricultural Statistics Service, 2007 Agricultural Resource Management Survey, Phase III.

tract fees that may amount to only 16 percent of the value of the poultry removed.

Trend to Larger Farms Likely To Continue

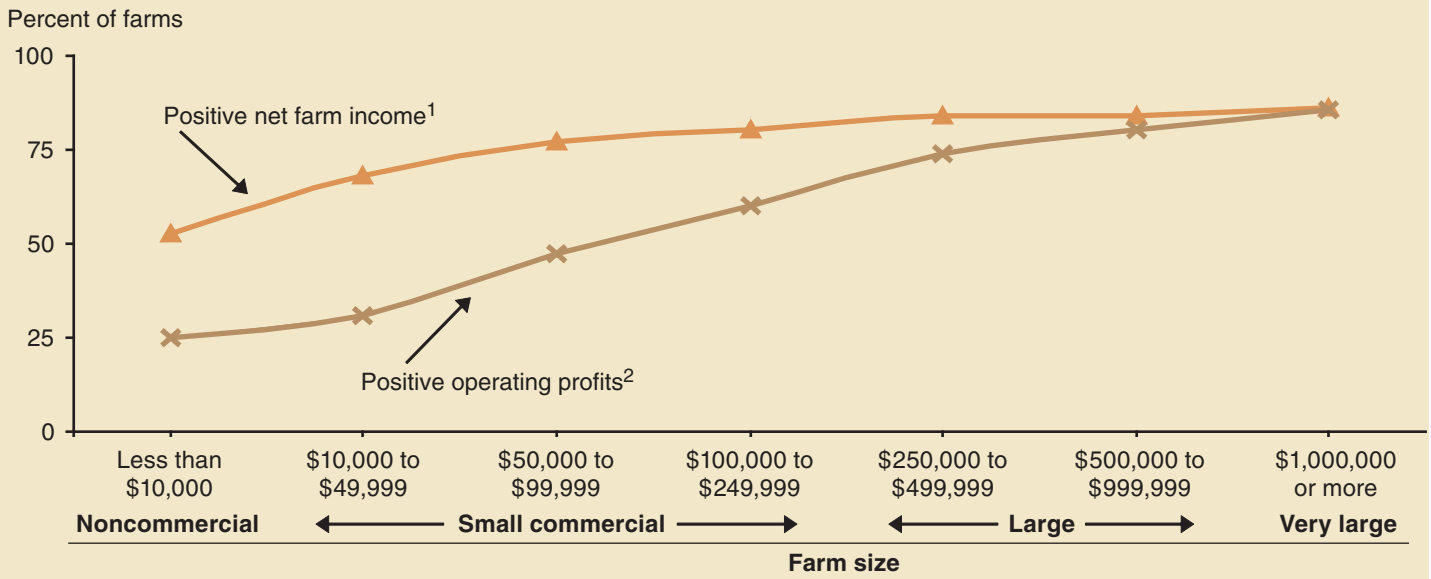
Because of the higher average returns realized by large and very large farms, competitive forces will likely continue to reduce the number of small commercial farms and shift production to larger farms. Natural life-cycle processes will reduce the role of small commercial farms over time since so many of their operators are currently at least 65 years old.

Nevertheless, some small commercial farms are profitable. For example, more than a fourth of small commercial farms have an operating profit margin (operating profits divided by gross farm income, expressed as a percentage) of at least 20 percent. The share of small commercial farms with positive returns also increases substantially if net farm income is used to measure profitability rather than operating profits. The main reason for this difference in profitability is that net farm income—unlike operating profits—places no value on the unpaid labor provided by the farm operator and others working on an unincorporated farm.

The number of small commercial farms and their share of production are likely to continue declining gradually. Substantial numbers of small commercial farms will remain in business for three reasons:

- Some small commercial farms have positive—and even high—operating profit margins. They will be able to resist competitive pressures and stay in business.
- Other farms with negative operating profits have positive net farm income since net farm income places no value on the operators' labor. These farms can stay in business if the operators are satisfied with undervaluing their labor.

Charges for unpaid operator's labor decrease operating profits, especially for small farms



Note: This figure includes only unincorporated farms, since the adjustments for operator and unpaid labor apply only to those farms.

[1]Net farm income = Gross cash receipts + home consumption + imputed value of farm dwelling + net inventory change – cash expenses – noncash benefits for paid labor – depreciation.

[2]Operating profits = net farm income + interest paid – charges for operator and unpaid labor – a charge for management.

Source: USDA, Economic Research Service and National Agricultural Statistics Service, 2007 Agricultural Resource Management Survey, Phase III.

- Some operators of the remaining small commercial farms will accept losses and stay in business by relying on off-farm income to cover farm and living expenses.

Small commercial farms may not be the only group of farms to decline in the future because of competitive and demographic pressures. Farms at the lower end of the large farm category, those with gross cash farm income from $250,000 to $499,999, may also experience losses in their share of farms and production. Compared with other large farms and very large farms, those at the lower end of the large farm category are more likely to have negative returns. The share of these farms operated by an older operator more than doubled between 1991 and 2007. While they managed to maintain their share of farms between 1991 and 2007, their share of production fell.

Assuming that the definition of a farm does not change, the number of noncommercial farms is unlikely to decrease. These farms produce a very small share of farm output, and the households operating them rely heavily on off-farm income. In some respects, these noncommercial farms and their households exist independently of the farm economy. A decline in their numbers due to competition with larger farms is not as likely. Noncommercial farm households are more likely to be affected by changes in the off-farm economy.

For more information . . .

Small Farms in the United States. Persistence Under Pressure, by Robert A. Hoppe, James M. MacDonald, and Penni Korb, EIB-63, USDA, Economic Research Service, February 2010, available at: www.ers.usda.gov/publications/eib63/

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